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## MOVEMENTS OF *PARDALOTUS SUBSTRIATUS*, RED-TIPPED PARDALOTE, IN WESTERN AUSTRALIA.

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### SUMMARY

Notes on the occurrence and activities of the Red-tipped Pardalote in ten localities in the South-West of Western Australia indicate that this species is, wholly or in part, migratory. Many birds may vacate the heavily-timbered forest block in the South-West in winter and radiate out to the drier areas of the State, even as far as the Pilbara, where they are only winter visitors. It is possible that breeding may take place only in the South-West and in south coastal areas.

### OBSERVATIONS

**Nangeenan**, near Merredin: I was resident in Nangeenan from January, 1932 until April, 1937. My first opportunity to study the Red-tipped Pardalote closely, occurred at Nangeenan. Three nesting sites were observed during 1934 and 1935. Birds were seen visiting one or another of the hollows in all months except March, April and July. Eggs were noted in November, feeding of young in February and October and carrying of nest materials in May, June and August. Observations indicated that birds were present and calling throughout the year.

I concluded that this species was resident in this area notwithstanding in 1936 the birds were silent and apparently absent until July, and seemed rather scarce until September.

**Baldivis**, near Rockingham: I was resident at Baldivis from April, 1937 until March, 1941. This species was noted regularly on a series of fifty transects designed to show the relative frequency of forest birds. The transects were made during the twelve months ending August 30, 1939. A high frequency of 94% resulted (*Emu*, 40: 237). Breeding was noted in October, 1937.

It seemed that here also the species was resident, though there appeared to be a period of scarcity during the first half of 1938.

**Bilbarin**, near Corrigin: I was in Bilbarin throughout 1946. Birds were noted regularly on a similar series of transects to those made at Baldivis conducted between February and December. A very high frequency of 93% was recorded (*W. Aust. Nat.*, 1: 34). Here again the species appeared resident.

**Caron**, near Percnjori: I was at Caron throughout 1946 and 1947. I arrived early in 1947 but did not record this species until May 17, when I encountered a flock of perhaps twenty, loosely associated with other small birds. During the remainder of 1947 and in 1948 I encountered the species occasionally, but not during the November to mid-March period.

Here for the first time I suspected that the species might have some regular migratory movement.

**Leonora:** I spent 1949 and 1950 in Leonora. Pardalotes appeared suddenly on April 18, 1949 and were present until September 7. In 1950, the species appeared on June 2, and remained until sometime in September.

Here the species appeared definitely migrant. I noted at the time the lack of suitable nesting facilities.

No fewer than four dead birds were brought to my notice—three in 1949. Two of these were forwarded to Dr. D. L. Serventy and one of them lodged in the W.A. Museum.

**Wooroloo:** I was at Wooroloo during 1951, 1952 and 1953.

Transects made between June, 1951 and November, 1953 showed the species to be present from:—

August 24, 1951 to April 6, 1952.

August 24, 1952 to April 12, 1953.

August 16, 1953 to end the survey, November 15, 1953. (*W. Aust. Nat.*, 5: 39).

Transects in Wandoo (*Eucalyptus redunca*) forest indicated that Pardalotes were present from August to April. This pattern is supported by other miscellaneous records in other habitats.

Flocks were noted in March, 1952 and April, 1953 and nests were located in September and in October.

Here the birds appeared definitely migrant with a pattern similar to that of the Western Warbler (*Gerygone fusca*).

**Williams:** I was in Williams from May, 1954 until the end of 1955. Transects conducted between December 11, 1954 and December 4, 1955 indicated that the birds were present regularly. The high frequency of 90% was recorded (*W. Aust. Nat.*, 8: 87).

**Collie:** I was in Collie from early 1956 until the end of 1961 and intermittently in 1962. Opportunities for observing were limited, but lists made during that period indicate that birds were present from October to April.

This pattern is similar to that of Wooroloo, but the period of absence is even longer.

**Harvey:** I have been in Harvey since late 1962. The pattern here is not clear cut and I have yet to collect adequate data but the town and adjacent scarp have a similar pattern to the Jarrah forest centres, Wooroloo and Collie, i.e.: Birds tend to be present from August until April.

## CONCLUSIONS

From the notes above and from notes made intermittently at Dangin, near Quairading, it would appear that the species is:—

Resident at Nangeenan, Bilbarin, Williams, Dangin, and Baldivis.

A winter migrant at Leonora and Caron.

A summer migrant at Wooroloo, Collie, and Harvey.

In favourable areas breeding is prolonged and pairs are almost certainly multiple-brooded.

## COMMENTS BY OTHER OBSERVERS

The foregoing observations and hypotheses have been referred to certain Western Australian ornithologists for comment and many relevant records have been provided by Mr. J. R. Ford, Dr. D. L. Serventy and Dr. G. M. Storr. These tend strongly to support my own observations, but there are some significant extensions, viz:

(a) J. Ford has made several excursions into the Great Victoria Desert, extending his observations into South Australia. These journeys were made either in May or in August-September. Birds were recorded in a number of localities, some observations suggesting migratory activity in May and others a falling off of numbers in September.

None was seen on a journey through the Gibson Desert in September, 1966.

(b) Other trips made by J. Ford during the months of January, February, May, September and December have provided a number of south coastal records over an area extending from Nornalup to the Eucla Basin.

Summing up his observations, J. Ford concludes: "Appears to be migrant to the Great Victoria Desert, staying to breed only during good seasons. Would move into this area from both South-Western Australia and from Eyre Peninsula, possibly moving over the Nullarbor Plain in some cases. Birds at Eucla and Goldfields areas seem to be reinforced by migrants during winter."

(c) Dr. D. L. Serventy records that on May 22, 1957, while he was camped twenty-five miles north-east of Wubin, steady rain began to fall—the opening rains of winter. Red-tipped Pardalotes were unusually abundant. Big flocks were seen flying around. Early on the morning of May 24 a large flock, estimated at one hundred birds, passed over the camp.

The birds encountered were mostly silent, the 'Be quick' call being heard only twice. The birds responded to calling up. This experience led the observer to suspect for the first time that the species was given to movements.

(d) Dr. Serventy's observations at Gooseberry Hill suggest a decline in numbers from February to August, with some unexpected periods of total absence. (A similar pattern could be true of Harvey).

(e) Dr. G. M. Storr has analysed a large number of records he made on extensive field trips during all months of the year. He concludes that:

(1) In summer (November to March) the species is widely distributed in eucalypt forests and woodlands north to Lake Arrowsmith (south of Dongara), Manmanning, Broad Arrow and Cundeelee, and south to the far south coast, i.e. most of the country south of the mulga-eucalypt line but not the northern wheat-belt.

(2) By May the species is moving north. It has entered the northern wheat-belt (e.g. at Lake Pinjarrega, west of Marchagee) and has even reached Pilbara (Depueh Island). At the same time there are still some birds in the far south.

(3) In winter (June to August), I have not recorded the species south of Dryandra. In this season it is found in the northern sector of the Jarrah Forest and on the Swan Coastal Plain, the central and northern sectors of the wheat-belt and Mulga Zone (e.g. Ninghan) and the river gums of the North-West and of Central Australia.

(4) By September, it has withdrawn from the northern wheat-belt (and the country farther north).

(5) By October, it has still not penetrated far into the South-West.

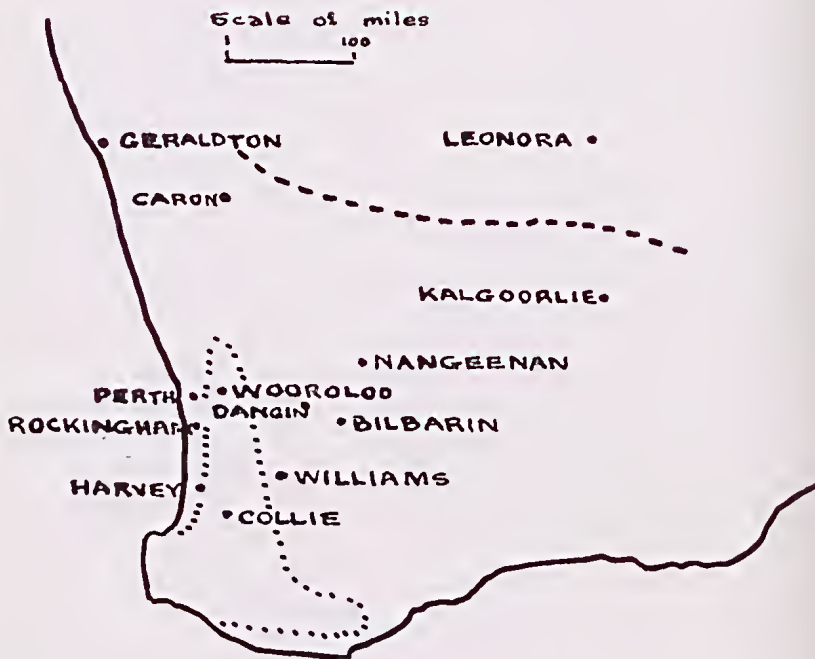
#### BREEDING DATA

Following a suggestion that useful breeding data might be obtained from museum collections, approaches were made to the Western Australian Museum, the National Museum of Victoria, the Australian Museum and the British Museum (Natural History).

Replies revealed a surprising situation; the Western Australian Museum has one clutch from the Stirling Ranges, undated. None of the other museums approached have eggs from Western Australia. However some intriguing inferences on the breeding distribution of the species may be drawn from the published records of egg collectors who might be expected to be assiduous in searching out nesting occurrences. In their articles on nesting seasons of Western Australian birds, I. C. Carnaby (*W. Aust. Nat.*, 4, 1954: 149) and A. H. Robinson (*W. Aust. Nat.*, 4, 1955: 187) record eggs only in the South-West. The localities worked were Claremont, Parkerville and Lake Grace, the egg dates given being October 29, November 5 and 16, and December 11. No eggs are recorded from the following places where these ornithologists worked over a number of years; Ullawarra Station, Landor Station and Exmouth Gulf—all in the North-West. It would be valuable if future observers would trace out the northern and inland limits of nesting.

In this connection it may be noted that at the 1948 R.A.O.U. Camp, at the mouth of the Murchison River, observers recorded two nests with young in late September (*Emu*, 48:212). In this same area, on August 7, 1959, J. R. Ford found a pair investigating a hollow in a river gum, though *Pardalotes* were apparently absent when he was there in October, 1957.

Dr. D. L. Serventy points out that non-breeding in the North-West would explain the absence of intergrades with *Pardalotus melanocephalus* such as those which occur in Eastern Australia, an absence which puzzled Finn Salomonsen (*Amer. Mus. Nov.*, No. 2068, 1961: 18).



Map showing main localities of observation, the Jarrah block and the Mulga-Eucalypt line.